Quick Guide

RIGOL

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DS1000E, DS1000D Series
Digital Oscilloscope

DS1102E, DS1052E, DS1102D, DS1052D

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Safety Notice

Review the following safety precautions carefully to avoid any personal injuries or damages to the instrument and any products connected to it. To avoid potential hazards, please use the instrument as specified by this manual only.

The instrument should be serviced by Authorized personnel only.

To Avoid Fire or Personal Injury.

Use Proper Power Cord. Use the power cord designed for the instrument and authorized in your country only.

Connect and Disconnect Logic Analyzer. Do not connect or disconnect logic Analyzer while the instrument is powered on.

Ground The Instrument. The oscilloscope is grounded through the grounding conductor of the power cord. To avoid electric shock the instrument, grounding conductor(s) must be grounded properly, before making connections to the input or output terminals of the instrument.

Connect The Probe. The probes' ground terminals are at the same voltage level of the instrument ground. Do not connect the ground terminals to a high voltage.

Observe All Terminal Ratings. To avoid fire or shock hazard, observe all ratings and marks on the instrument. Follow the user's guide for further ratings information before making connections to the instrument.

Do Not Operate Without Covers. Do not operate the instrument with covers or panels removed.

Avoid Circuit or Wire Exposure. Do not touch exposed connections and components when power is on.

Do Not Operate With Suspected Failures. If suspected damage occurs with the instrument, have it inspected by qualified service

personnel before further operations.

Provide Proper Ventilation. Refer to the installation instructions for proper ventilation of the instrument.

Do Not Operate in Wet/Damp Conditions.

Do Not Operate in an Explosive Atmosphere.

Keep Product Surfaces Clean and Dry.

The disturbance test of all the models meet the limit values of A in the standard of EN 61326: 1997+A1+A2+A3, but can't meet the limit values of B.

Measurement Category

The DS1000E, DS1000D series Digital Oscilloscope is intended to be used for measurements in Measurement Category I.

Measurement Category Definitions

Measurement Category I is for measurements performed on circuits not directly connected to MAINS. Examples are measurements on circuits not derived from MAINS, and specially protected (internal) MAINS derived circuits. In the latter case, transient stresses are variable; for that reason, the transient withstand capability of the equipment is made known to the user.

WARNING

IEC Measurement Category I. The input terminals may be connected to circuit terminal in IEC Category I installations for voltages up to 300Vrms. To avoid the danger of electric shock, do not connect the inputs to circuit's voltages above 300Vrms.

Transient overvoltage is also present on circuits that are isolated from mains. The DS1000E, DS1000D series Digital Oscilloscopes is designed to safely withstand occasional transient overvoltage up to 1000Vpk. Do not use this equipment to measure circuits where transient overvoltage could exceed this level.

Safety Terms and Symbols

Terms in This Guide. These terms may appear in this manual:

WARNING: Warning statements indicate the conditions or practices that could result in injury or loss of life.

CAUTION: Caution statements indicate the conditions or practices that could result in damage to this product or other property.

Terms on the Product. These terms may appear on the product:
DANGER indicates an injury or hazard that may be immediately happen.
WARNING indicates an injury or hazard that may be not immediately happen.
CAUTION indicates that a potential damage to the instrument or other property might occur.

Symbols on the Product. These symbols may appear on the product:

Hazardous Voltage

Refer to Instructions

Protective Earth Terminal

Chassis Ground

Earth Ground

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Necessary Inspection

1. Inspect the shipping container for damage.

Keep the damaged shipping container or cushioning material until the contents of the shipment have been checked for completeness and the instrument has been checked mechanically and electrically.

2. Inspect the instrument.

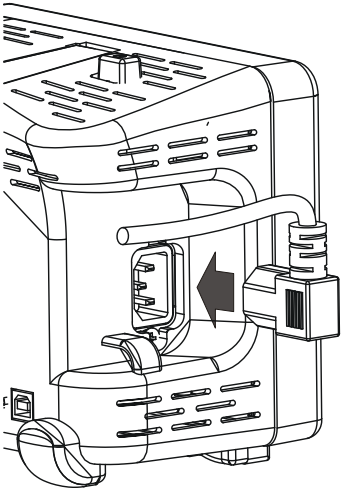
In case there is any mechanical damage or defect, notify the **RIGOL** Sales Representative. If the shipping container is damaged, or the cushioning materials show signs of stress, notify the carrier as well as the **RIGOL** sales office. Keep the shipping materials for the carrier's inspection.

3. Check the accessories.

Please check the accessories according to packing list. If the contents are incomplete or damaged notify the **RIGOL** Sales Representative.

How to Connect Power Cord

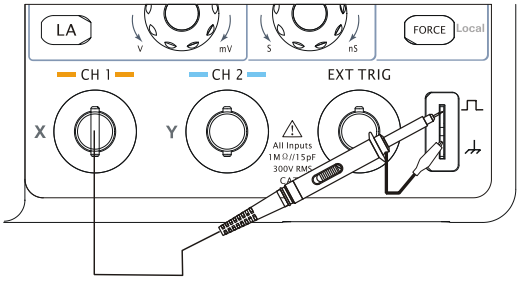
After inspecting the instrument and the accessories, connect the power cord as shown in the following figure.

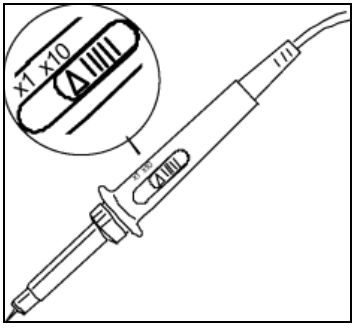


Press the power key on the top of the oscilloscope. if the oscilloscope can not be powered on, check the power cord connection. If the oscilloscope still can not start up after the inspections, please contact **RIGOL** for help.

How to Connect Probe or BNC

1. Connect the probe



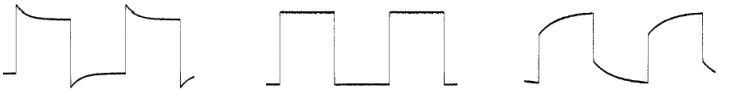


As shown in the above figures, set the attenuation switch on the probe to 10X and connect the probe to Channel 1 on the oscilloscope, push and rotate clockwise to lock the probe in place.

If your probe is a new one, or it is the first time you connect to the oscilloscope, before use it, please do the following compensation operation:

(1) Set the attenuation switch on the probe to 10X and connect the probe to Channel 1 on the oscilloscope. Attach the probe tip and ground lead to the PROBE COMP connector. Press CH1, and set the attenuation menu to 10X. Then press AUTO.

(2) View the waveform displayed on the screen。



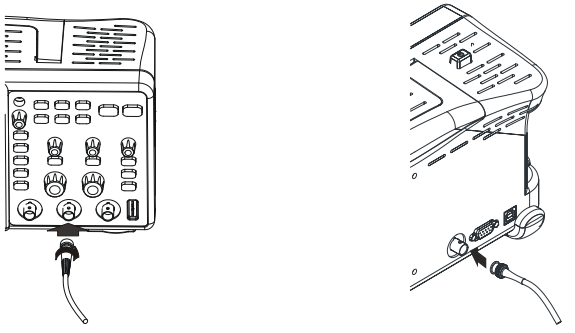
Over Compensated　　Correctly Compensated　　Under Compensated

(3) If necessary, use a non-metallic tool to adjust the variable capacitor of the probe for the flattest square wave (Correctly Compensated) being displayed on the oscilloscope.

(4) Repeat if necessary.

2. Connect the BNC

As shown in the following figure, insert the the BNC cable to the BNC conector on the front pannel, rotate clockwise to lock the BNC.

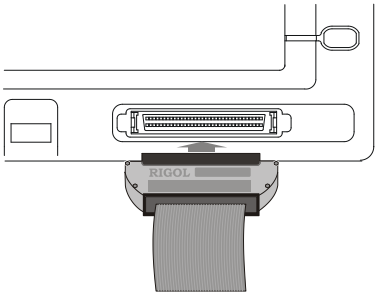


BNC Connection (Front Panel)　　P/F Connection (Rear Panel)

How to Connect Logic Analyzer

DS1000D Series Oscilloscopes provide the Logic Analyzer to meet users' requirement.

1. Before connect the logic analyzer, please turn off the power source to avoid any possible damage during the connection.

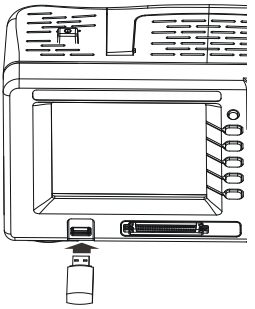


Connect Logic Analyzer

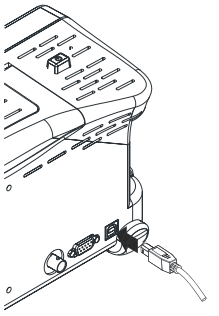
2. Connect the Logic cable to the digital input port on the front panel of the oscilloscope as shown in the above figure. There is a sign on the Logic Probe that you can only connect the cable in the proper direction.

How to Connect USB and RS232 Devices

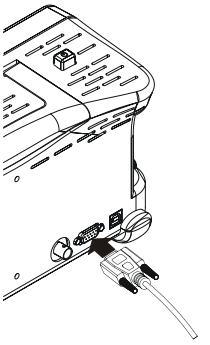
DS1000E, DS1000D Series Oscilloscope support the USB flash drive and connections to PC or printer throught USB. The instrments also support RS232 communication.



Connect USB Host



Connect USB Device



Connect RS232 Cable

Troubleshooting

1. After the oscilloscopes is powered on, the screen remains dark (no display):

(1) Check the power cord connection.
(2) Ensure the power switch is turned on.
(3) After the above inspection, restart the oscilloscope.
(4) If the problem still remains, please contact **RIGOL** for help.

2. After the signal acquisition the waveform does not appear:

(1) Check the probes connected with the signals.
(2) Check the probes connected to the channels firmly.
(3) Check the probes connected with the object being tested.
(4) Check the circuit generates signal at the test point.
(5) Repeat the acquisition.

3. The measurement result is 10 times higher or lower than the value expected.

Check if the probe attenuation is the same as the channel attenuation.

4. If the oscilloscope does not get a stable waveform display:

(1) Check the **Trigger Source** and notice if it is set to the channel in use.
(2) Check the **Trigger Type**. Use "Edge" for normal signals, and use "Video" for VIDEO signals.

(3) Switch the **Coupling** into "HF Rejection" or "LF Rejection" in order to filter the noise which disturbs trigger.
(4) Adjust the trigger Sensitivity and the hold off time.

5. After pressing the RUN/STOP **button, the oscilloscope does not display any waveform on screen.**

Check whether the **Trigger Mode** is set to "Normal" or "Single" and see whether the trigger level is out of the signal range. If yes, set the trigger level in proper range by turning the LEVEL knob or pressing the 50% button. Or set the Trigger Mode as "AUTO". Moreover, push AUTO button to display the waveform on screen.

6. After the Acquisition is set to "Averages" or Display Persistence is set ON, the waveform refreshes slowly.

It is normal in these settings.

7. The signal is displayed as ladder like waveform.

(1) The time base setting maybe is too slow. Turn the horizontal SCALE knob to increase horizontal resolution to improve the display.
(2) Maybe the display **Type** is set to "Vectors", and set it to "Dots" mode to improve the display.

Contact RIGOL

If you have any problem or requirement occurs when using our products, please contact **RIGOL** Technologies, Inc. or the local distributors.

In China: Please call
Tel: (86-10) 8070 6688
Fax: (86-10) 8070 5070
Service & Support Hotline: **800 810 0002**
9:00 am–5: 00 pm from Monday to Friday

Or by e-mail:
service@rigol.com

Or mail to:
RIGOL Technologies, Inc.
156# CaiHe Village, ShaHe Town, ChangPing District, Beijing, China
Post Code: 102206

Overseas: Contact the local **RIGOL** distributors or sales office.

For the latest product information and service, visit our website:
www.rigol.com